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AUTHOR Main, JoDell K.
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ABSTRACT

A project was conducted to see if computer-assisted instruction could be used successfully with the low-level, non-reading adult. The experimental classroom group consisted of mentally handicapped and other educationally handicapped adults in adult basic education (ABE) programs. (Long-range implementation is aimed at ABE students who have a combination of handicaps ranging from mental retardation, severe learning disabilities, or schizophrenia to hearing impairments, cerebral palsy, or degenerative muscle diseases.) Both mathematics and language skills were selected for inclusion in the curriculum. Students used computer-assisted instruction Tuesdays and Thursdays for about 45 minutes. An hour and a half of traditional classroom instruction with a teacher preceded computer time. All students made significant progress in word recognition and showed a gain in math progress. All materials were evaluated and results distributed to adult basic education teachers. No discernable differences in mastering comprehension skills via computer or classroom learning were found. The computer-classroom mix did seem to account for greater gains in learning than some students had experienced previously. Project forms and a summary of results are appended. (YLB)

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FINAL REPORT OF

Computer Assisted Teaching Comparisons with Handicapped

84-8074

A special demonstration project, funded by a grant from the Indiana Department of Public Instruction, Division of Adult and Community Education under Section 310 of the Adult Education Act, P.L. 91-230 as amended.

Grantee: Southeastern Indiana Vocational School
P.O. Box 156, U.S. Highway 50
Versailles, Indiana 47042

Project Director: Rosalie Hooton

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ABSTRACT

It is generally agreed that the adult non-reader is the most demanding of the teacher's time in an adult basic education classroom. This project was proposed to see if computer-assisted instruction could be used successfully with the low-level adult. The experimental classroom group was retarded and other educationally handicapped adults.

This report is intended to encourage teachers working with low level adults to explore the use of computer assisted instruction. The project was unable to document whether computer learning or teacher-based instruction was more effective. It is intended to imply that short, frequent sessions on the computer combined with regular classroom instruction can boost students self confidence, give concrete goal management opportunities to student and teacher and increase the amount of learning which can be measured through testing.

The computer was used in the tutor mode; that is, the computer has the knowledge and the student is to acquire it. Tutor mode computer assisted learning can meet individualized instructional needs for the teacher who has a large group with mixed learning levels.

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INTRODUCTION

The Southeastern Indiana adult basic education teaching staff identified a need for help in teaching non-reading adults. Most of the class sites operated in the Southeastern Indiana ABE program are satellite classes with mixed level students. Most classes are staffed with a lone instructor and no classroom aide.

The computer seemed to be an economical source of assistance to the ABE instructor compared to the budgetary constraints of hiring additional aides or teachers. It also seemed appropriately attentive to the needs of the non-reader since programs could give it infinitely patient tutorial capabilities.

Finally, computers were already available in our central facility, the Southeastern Indiana Vocational School. If we were to be dissatisfied with computer assisted instruction at the end of the project, we would not have spent money on equipment. A group of non-reading adults was also readily available--employees at the New Horizons Rehabilitation Center in Versailles--who were already participating in adult basic education.

Long range implementation of the project is aimed at the 90 students in our ABE program who have a combination of handicaps ranging from mental retardation, severe learning disabilities or schizophrenia to hearing impairments, cerebral palsy or degenerative muscle diseases. All of these students are non-readers. They are grouped at three centers--Versailles, Madison State Hospital and Muscatatuck State Hospital.

DESIGN

Needed Skills were identified from the three groups of adult non-readers. Those skills included counting by 1's, 5's, and 10's, number recognition, counting things and money, making change and learning basic addition and subtraction facts. Language skills that needed to be stressed were alphabet recognition, letter and blend sounds, name recognition, recognition of survival words, comprehension of survival vocabulary and other basic reading skills.

The proposed curriculum for the project would include as many of these skills as were identified as lacking through student testing. An ABE teacher with a math teaching background, Rosalie Hooton, was hired to direct the project.

Mrs. Hooton was enrolled in a Purdue University graduate course to get an introduction to the operation of the TRS-80 Model III Computers that the students would be using. The course covered operation of the computer, curriculum, applications of computer-assisted instruction BASIC programming language and problem-solving with computers. The computers used for the course were the same ones the ABE students would be using.

Once the project director was familiar with the operation of the TRS-80 Model III, a search for software to teach the identified skills was begun. The project director received assistance from the federal resource center in Indianapolis in previewing software. Distributors of computer software were contacted for preview of programs.

Acquisition of software was a lengthy process. Suitable math programs were much easier to find than reading programs. TRS-80 Model III graphics are crude enough to cause the students to learn that square 8's, 6's, 9's, 2's, 5's, and 3's, are the same as the round correspondents on the keyboard.

Students used computer assisted instruction on Tuesdays and Thursdays for about 45 minutes maximum. An hour and a half of traditional classroom

instruction with a teacher and classroom aide preceded computer time.

Students were tested using the Brigance (blue level) at the beginning of their classroom work in September, 1983. Students who completed the school year were retested using the same instrument in April, 1984.

A software evaluation checklist was completed on each item previewed. A student record sheet for computer time and progress was kept for each student.

RESULTS

All students made significant progress in word recognition. All students showed a gain in math progress.* Three of the ten students gained two grade levels in word recognition.

Maximum time spent on the computer was 49½ hours. Maximum classroom time was 99 hours. The total average hours attended (possible 149) was 92. The student with the best attendance put in 140.5 hours for the year. This student also showed the least gain--a factor that her teacher attributes to indifference toward participation in school.

All previewed materials were evaluated. Results were put into a readable format and distributed to adult basic education teachers at the annual Indiana Association for Adult and Continuing Education in 1984.

There were no discernable differences in mastering comprehension skills via computer or classroom learning. The computer-classroom mix did seem to account for greater gains in learning than some of the students had experienced previously. All of the students enjoyed the computer time and shared a sense of pride in being able to use the latest in educational tools.

At the beginning of the project all of the students reported they wanted to participate in computer learning. All had heard of computers. None had seen one or knew what a computer was. At the end of the project students knew how to operate the equipment, load their own software and had a basic terminology vocabulary. All had overcome their fears of the equipment--one student shook for the first three weeks when using the computer.

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* See Appendix

CONCLUSIONS/RECOMMENDATIONS

Computer-assisted instruction seems highly feasible for adult non-readers and handicapped adults. Students seem to do best with short, frequent periods of instruction on the computer. Classroom instruction can and should supplement the computer lessons.

Teacher controlled instructional programs work best with the low level reader. It allows the teacher to monitor progress before the student can proceed. Many of the best programs are also internally controlled for student mastery of concepts or application.

The surprise to those who taught in the project was the gain in word recognition skills that most of the students made. The content area of 90% of the software seemingly was mathematics. The adults mastered reading directions in order to operate the programs and increased their reading skills.

REFERENCES

A. Guidelines for Evaluating Computerized Instructional Materials, William P. Heck, Jerry Johnson, Robert J. Kansky for the Instructional Affairs Committee of the National Council of Teachers of Mathematics, 1906 Association Drive, Reston, Virginia 22091

B. Precollege Computer Literacy: A Personal Computing Approach, David Moursand, International Council for Computers in Education, University of Oregon, Eugene, Oregon, 1982

APPENDIX A

SOFTWARE EVALUATION CHECKLIST

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PROGRAM NAME: _____ SUBJECT AREA: _____

SOURCE: _____ COST: _____

REVIEWER'S NAME: _____ DATE: _____

1. INSTRUCTIONAL RANGE

_____ grade levels

_____ ability levels

2. INSTRUCTIONAL GROUPING FOR PROGRAM USE

_____ individual

_____ small group (size: _____)

_____ large group (size: _____)

3. EXECUTION TIME

_____ minutes (estimated) for average use

4. PROGRAM USE(S)

_____ drill or practice

_____ tutorial

_____ simulation

_____ instructional gaming

_____ problem solving

_____ informational

_____ other (_____)

5. USER ORIENTATION: INSTRUCTOR'S POINT OF VIEW

low				high	
•	•	•	•	•	flexibility
•	•	•	•	•	freedom from need to intervene or assist

6. USER ORIENTATION: STUDENT'S POINT OF VIEW

low				high	
•	•	•	•	•	quality of directions (clarity)
•	•	•	•	•	quality of output (content and tone)
•	•	•	•	•	quality of screen formatting
•	•	•	•	•	freedom from need for external information
•	•	•	•	•	freedom from [illegible]

7. CONTENT

low				high	
•	•	•	•	•	instructional focus
•	•	•	•	•	instructional significance
•	•	•	•	•	soundness or validity
•	•	•	•	•	compatibility with other materials used

8. MOTIVATION AND INSTRUCTIONAL STYLE

passive				active	
•	•	•	•	•	type of student involvement

low				high	
•	•	•	•	•	degree of student control

none	low				high	
•	•	•	•	•	•	use of game format
•	•	•	•	•	•	use of still graphics
•	•	•	•	•	•	use of animation
•	•	•	•	•	•	use of color
•	•	•	•	•	•	use of voice input and outp
•	•	•	•	•	•	use of light pen
•	•	•	•	•	•	use of ancillary materials
•	•	•	•	•	•	use of

9. SOCIAL CHARACTERISTICS

present and negative	not present	present and positive	
_____	_____	_____	competition
_____	_____	_____	cooperation
_____	_____	_____	humanizing of computer
_____	_____	_____	moral issues or value judgments
_____	_____	_____	summary of student performance

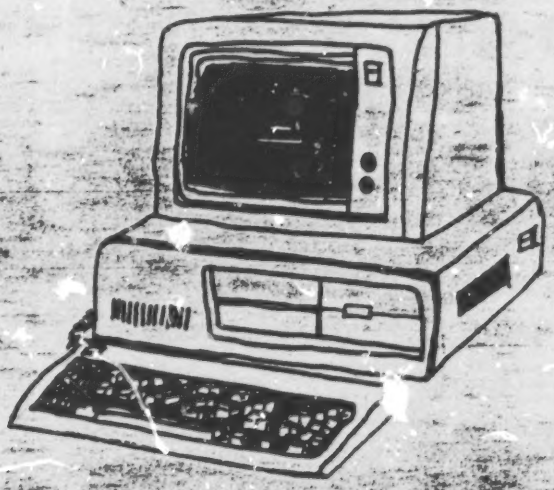
APPENDIX B

Student's Name _____ STUDENT RECORD SHEET

Scheduled Time _____

Date	Program	Lesson Number	Number Worked	Number Correct	Percentage Correct	Next Lesson	Comments

APPENDIX C



COMPUTER ASSISTED TEACHING

COMPARISONS WITH THE HANDICAPPED

Students are all mentally handicapped adults; some are also physically handicapped. They attend New Horizons Rehabilitation Center the rest of the day and the other 3 days a week.

Students are in the classroom 1½ hours two days a week. They have had a total classroom time of 99 hours. Computer time is 45 minutes a day twice a week for a total of 49½ hours.

Most of the students entered class in September of 1983; however, one entered in December, noted on graphs as 12-83, and one in March of 1984, noted 3.

Two students dropped out of the program. One had progressed from 3.5 to 3.8 in reading by 1-84, and from 4.4 to 5.2 in math. The other had made no measurable progress in reading or math. However, he had not entered the program until September 27, was ill the entire month of October and one week in November and two weeks in December. He actually only attended class four weeks.

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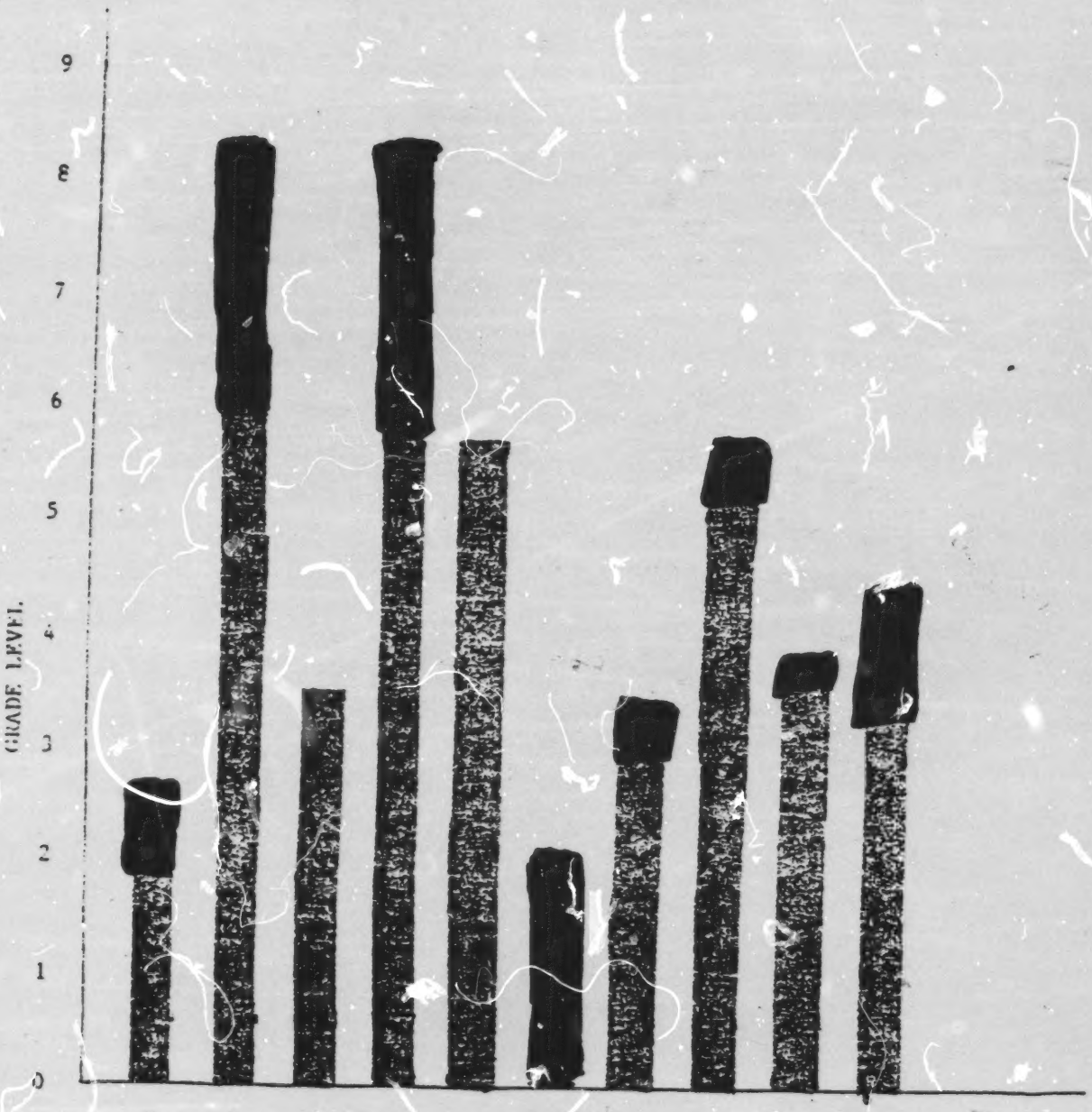
READING PROGRESS 9-83 to 3-85
(WORD RECOGNITION)



STUDENT

@ student dropped out of program before testing in May
* student entered program 3-13-84

student level at beginning

student level at end

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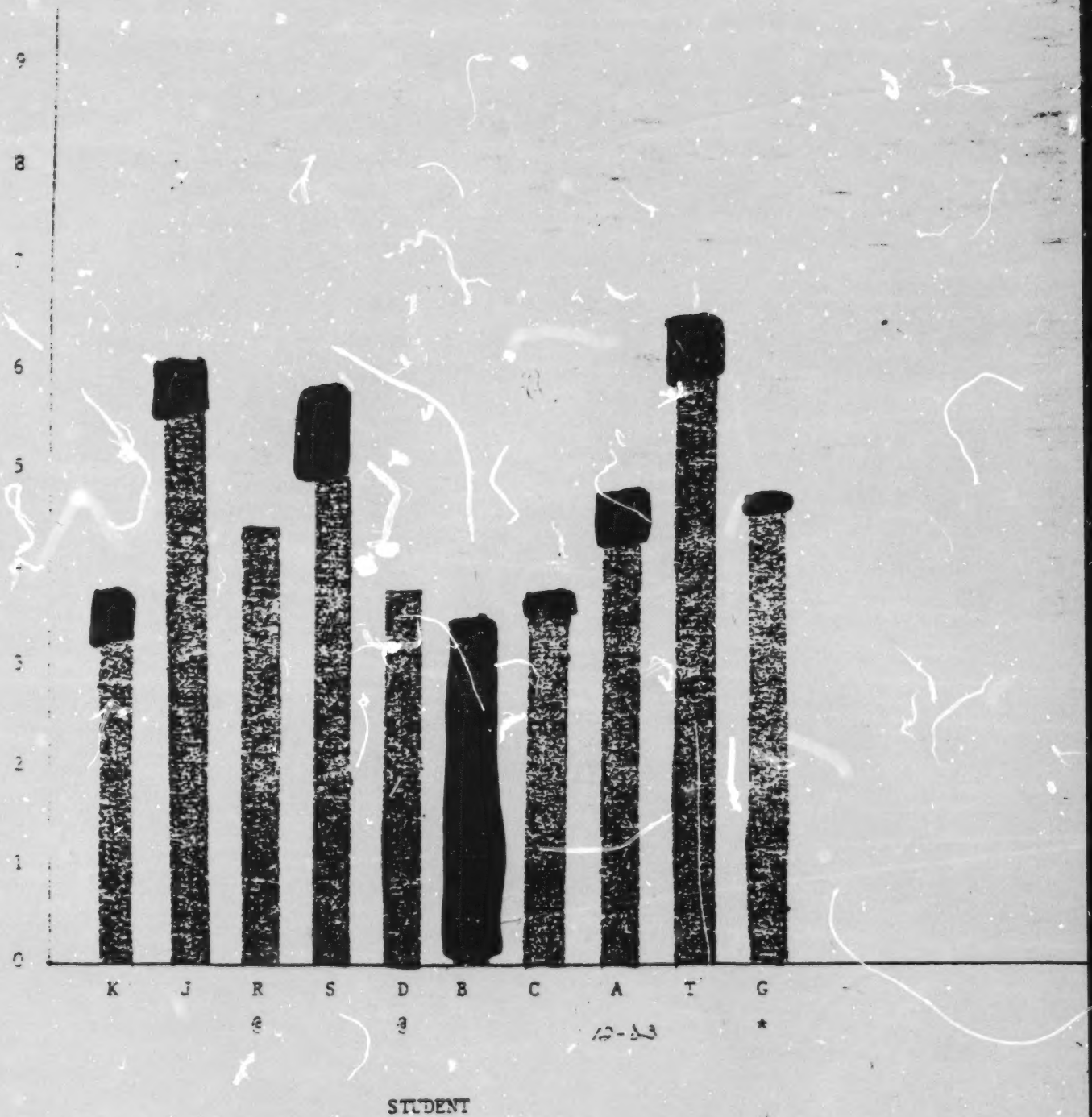
MATH PROGRESS 9-83 to 5-84



@ student dropped out of program before testing in May
* student entered program 3-13-84

student level at beginning

student level at end

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SOFTWARE EVALUATIONS

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EXCELLENT	ACCEPTABLE	NOT RECOMMENDED	SOURCE & ADDRESS
Alpha Key K-8 Math*			Radio Shack
Alpha Key Alpha Letter Drop Match It Early Games* Number Match	Usage Bonus Punctuation & Capitalization	Our Wierd & Wacky World	Follett's Micro-Computer Division 4506 Northwest Highway Crystal Lake, IL 60014 800-435-6170
Vocabulary Builder	Crossword Generator		Dynatek 586 Concord Avenue Williston Park, NY 11596 516-248-8952
	Area, Perimeter, Circumference & Linear measurement Math Invaders Place Value		Educational Activities, Inc. P. O. Box 392 Freeport, NY 11520 516-223-4666
	The Cloze Technique for Developing Comprehension		A.W. Peller & Associates, Inc. 124 Rice Ave. P. O. Box 106 Hawthorne, NJ 07507 201-423-4666
Word Blaster	Basic Math Facts & Games Customized Alphabet Drill Story Starter		Random House School Division Suite 201, Brandywine Rd. Atlanta, GA 30341 800-241-6402
		Addition & Subtraction of Whole Numbers Winning with Phonics	American Micro Media P. O. Box 306 Red Hook, NY 12571 914-756-2557
Intro. to Math	Math Facts Games 2	Beginning Math Concepts@ Using Money & Making Change@ Money Values@ If You Ran a Cookie Shop@	Opportunities for Learning 8950 Lurline Ave. Dept. 96 Chatsworth, CA 91311
	Reading Comprehension		Dorsett Educ. System

GENERAL NOTES ON PURCHASING AND USING SOFTWARE

ORDERING

Preferably preview software before purchasing it. If this is not possible, buy with a 30 day return or pay policy. DO NOT BUY SIGHT UNSEEN! We saw some real junk and could return it because we bought on a 30 day return.

BUYING

Be sure that discs may be copied for a backup or find out the company policy on purchasing backup copies or replacement of discs that go bad.

Check the discs and cassettes before paying for them. Some have systems errors that will not let them run.

Be sure the program has documentation and that it is accurate. It should be complete enough to answer any questions about the program and how to run it.

USING

Be sure to make a backup disc if possible.

Sometimes students have problems with graphics. The most common problem we found was in making the change from numerals on the screen to those on the keyboard. It is good for them to learn the difference but it can be confusing for some.

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This project was done through a 310 project grant from the Indiana Dept. of Public Instruction.

Project Director: JoDell Main
Project Teacher: Rosalie Hooton
Project Aide: Shirley Pavey